

Remarks

Applicants respectfully request reconsideration of this application in view of the amendments and remarks made herein. Claims 55-66 are currently pending. Claims 55, 63, 64 and 65 have been amended without prejudice to pursue prosecution of such subject matter in other applications. Applicants respectfully request that the amendments and remarks made herein be entered into the record of the instant application.

1. The Claims Are Not Anticipated by Maddaloni *et al.*

Claims 55 and 58-66 are rejected under 35 U.S.C. § 102(b) as being anticipated by Maddaloni *et al.* (Transgenic Research, 1997 6:393-402: “Maddaloni”). According to the Examiner, Maddaloni teaches the selective expression of a ribosome inactivating protein to a specific location within the plant body, *i.e.*, a wounding target site. The Examiner further states that although Maddaloni is silent with respect to the induction of plant cell death at that location, Maddaloni need not explicitly teach the induction of plant cell death at that location to anticipate the rejected claims, as the induction of plant cell death at that location is the inherent result of practicing the claimed method. Further, according to the Examiner, because the method taught by Maddaloni utilizes the exact same materials and method steps as those recited in the rejected claims, the method taught by Maddaloni is presumed to produce the same inherent result as the claimed method, including results not explicitly taught or recognized by Maddaloni.

Applicants have amended the independent claims to specify that the nucleic acid encodes a *mature maize ribosome inactivating protein comprising an α domain and a β domain arranged contiguously* and having type 3 ribosome inactivating activity. In contrast to the claimed subject matter, Maddaloni teaches the use of an expression vector that “contains the entire coding region and the 3’ untranslated region of the b-32 gene” (see page 394, last paragraph). Accordingly, the expression vector of Maddaloni comprises the N-terminal region, the α domain, a central peptide spacer, and the C-terminal region of the ribosome inactivating protein and is, therefore, in an *inactive form*.

Given the differences between the subject matter of the claims as amended and the teaching of Maddaloni, the claimed invention simply cannot be anticipated by Maddaloni. Accordingly, Applicants request withdrawal of the rejection of the claims as anticipated by Maddaloni.

2. The Claims Are Not Obvious Over Cited Art

Claims 56-57 are rejected under 35 U.S.C. §103(a) as being unpatentable as obvious over Maddaloni in view of Hey *et al.* (Plant Physiology, 1995, 107:1323-1332: "Hey") and Boston *et al.* (US Patent No. 5,332,808: "Boston"). According to the Examiner, Maddaloni teaches the selective expression of a ribosome inactivating protein to a specific location within the plant body, *i.e.*, a wounding target site. The Examiner further states that although Maddaloni is silent with respect to the induction of plant cell death at that location, Maddaloni need not explicitly teach the induction of plant cell death at that location to anticipate the rejected claims, as the induction of plant cell death at that location is the inherent result of practicing the claimed method. Further, because the method taught by Maddaloni utilizes the exact same materials and method steps as those recited in the rejected claims, the method taught by Maddaloni is presumed to produce the same inherent result as the claimed method, including results not explicitly taught or recognized by Maddaloni. Further, the Examiner asserts that Hey teaches a biologically active recombinant mature maize RIP comprising an α domain and a β domain arranged contiguously and Boston teaches the use of a nos terminator in a plant expression construct.

As indicated above, Applicants have amended claim 55, from which claims 56 and 57 depend, to specify that the nucleic acid molecule encodes a ***mature maize ribosome inactivating*** protein ***comprising an α domain and a β domain arranged contiguously*** and having type 3 ribosome inactivating activity. In contrast, Maddaloni teaches an expression vector that encodes the N-terminal region, the α domain, a central peptide spacer, and the C-terminal region, respectively, and is, therefore, in an ***inactive form***. Further, Maddaloni fails to teach or suggest transforming a plant with a chimeric construct to cause plant cell cytotoxicity at a target cite, wherein the chimeric construct comprises a promoter that induces expression of an active form of a maize RIP at and/or adjacent to the target site.

With regard to the Hey and Boston references, Applicants assert that neither reference makes up for the deficiencies of Maddaloni. Boston states that "as noted above, ribosome-inactivating proteins are proteins which inactivate or severely reduce the activity of ribosomes, in particular ***nonplant*** eukaryotic ribosomes..." (see col. 4, lines 9-14). Thus, Boston fails to disclose, teach or suggest the use of a maize RIP to cause ***plant cell cytotoxicity***. Indeed, Boston relates to the use of maize RIP in or applied to plants to directly

cause an effect on a *pathogen* (see col.4, lines 14-21). It should also be noted that Boston fails to disclose teach or suggest the use of a chimeric construct, comprising a target specific promoter and a coding sequence for the α domain and a β domain arranged contiguously, for target cell death.

With regard to the Hey reference, Hey relates to the determination that pro and $\alpha\beta$ forms of RIP are not unique to maize and the assessment of both maize pro-RIP and $\alpha\beta$ -RIP on ribosomes from maize and other species. A review of Hey indicates that Hey attempted to produce maize and tobacco plants that stably expressed inactive pro-RIP or active $\alpha\beta$ RIP (where the α and β domains are arranged contiguously) under a constitutive promoter. While Hey was able to produce maize plants that stably expressed active $\alpha\beta$ -RIP, maize ribosomes were found to be insensitive to this RIP. Further, although Hey was able to produce tobacco plants that stably expressed inactive pro-RIP, they were actually unable to recover transgenic plants that stably expressed active $\alpha\beta$ -RIP (see p. 1330, left hand col., second paragraph). Thus, Hey does not disclose, teach or suggest to produce a plant which expresses mature active $\alpha\beta$ -RIP (where the α and β domains are arranged contiguously) because, according to Hey, it is only possible to stably express mature active $\alpha\beta$ -RIP in a plant that is insensitive to such a RIP. Thus, Hey teaches away from the present invention.

None of the references, alone or in combination, disclose, teach or suggest that cytotoxicity at a target site of a plant can be induced by the use of a chimeric gene which expresses a mature $\alpha\beta$ -RIP under the control of a target specific promoter. Applicants respectfully request that the Examiner withdraw the rejection of these claims as obvious over Maddaloni in view of Hey and Boston.

CONCLUSION

Applicants respectfully submit that all pending claims 55-66 are presently in condition for allowance. Prompt and favorable reconsideration and allowance of all pending claims is respectfully requested.

The Commissioner is authorized to charge any fees relevant to this filing to Deposit Account No. 11-0600. The Examiner is invited to contact the undersigned to discuss any matter in this application.

Respectfully submitted,
KENYON & KENYON LLP

Date:

5/22/06

A handwritten signature in black ink, appearing to read 'Anthony Giaccio', written over a horizontal line.

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